Basically, the model takes as inputs a number of databases, Census Bureau data, Dun & Bradstreet business data, ARMIS report data on demand, number of lines, amount of call attempts and so on that the telephone company is currently serving, digests that information in what's called the "Input Template," produces from that a rather precise estimate of the amount of demand and where it's located to the degree of precision that's appropriate to get costs accurately. Then moves into a distribution module which, as you might guess from the name, calculates what the outside plant network looks like from the wire center down to the customer premises. It does the same thing for — I guess I should have broken it down into two parts. There's a distribution module which is that last mile or two miles of the network, and then a feeder module which similarly calculates that higher cross-section part of the network closest to the central office. Moves then into a switching and interoffice module where both the switches, the surrounding wire centers and all of the interoffice facilities, transport switching, signaling system 7 components are calculated. And ultimately produces as output to the expense module, five very detailed investment category — produces all the investments required by the expense module in order to calculate monthly costs.

The output module takes all of that data, takes additional inputs on depreciation rates, cost of capital, percent debt-equity, return on equity, customer operations, expenses and the like, and produces from the investment, applies these capital carrying cost calculations, applies network operations

calculations to produce ultimately an output which is stated as the dollars per appropriate unit of capacity. For instance, if we're talking about universal service, the standard output report will produce the cost per month per line. It will do it by various disaggregations which we'll talk about in just a second. If we're talking about unbundled network elements, it might produce, for instance, in case of the loop, also produce a cost per line per month. If we're talking switching, it produces a cost per minute. If we're talking about interoffice transport there's a couple of ways it might cut it, but, for instance, it might have a cost per DS0 equivalent capacity on an interoffice circuit or per mile.

So the ultimate output, then, is again fairly brief, fairly concise, and states rather exactly what the outputs that are critical to the model but along the way, as I said, there's any number of intermediate outputs that one can examine as well.

So that's the basic thrust of the Hatfield Model. And now, again, anticipating that many of you — hopefully all of you or most of you — understand Release 2 that's been around for a while, and if you don't understand it, see me during breaks or whatever, I would be glad to talk at length until your ears fall off. But anticipating that many of you have long since seen Release 2, let me talk about some of the key enhancements. It was hard to boil down and select a list to put up here. I caused the rest of the developers to sort of cringe that I could have turned all of their beautiful work into a relatively few points,

so understand there's a lot of detail that lie behind each of these points, but these are the essential elements. One is that based on an analysis of the NPAN and NXX combinations that are serving each census block group and each census block within a census block group we're essentially able to locate the census block groups by the wire center that actually serves them, which is a considerable improvement over what you may have known in the earlier version of both this model and BCM where we were actually locating CBGs according to nearest wire center which might not always accurately capture the local situation. I consider this particular thing of this mapping is addressing that issue that says, you know, I really do have population out there, it's located in certain places. It starts off being Census Bureau data but it needs to be mapped into something that's more recognizable to the telephone company and by correctly mapping CBGs to wire centers, we now have a good understanding of the area served by a given wire center so the rest of the model can proceed to develop a network that's honed on that wire center and serves those customers that have been provided by the Census data. So, relocated, if you will, reassignment of CBGs to wire centers by NPAN and X constituents, not by geographic proximity.

Second, we already were doing what we thought at the time was the best available job of mapping the number of residents and business lines to each CBG based on some new database information available to us. Ben commented that the world continues to unfold. What's striking now is it's not only the models unfold, but databases unfold. There's more and more available

information out there. Eventually they're going to know us by our Social Security Numbers and probably locate us within a few feet and track us for our whole lives, but for now, the databases get better and better and so we're able to much more accurately map Bis and Res lines out of the totality of lines served by the telephone company to map those into particular locations.

Third is we've made a number of improvements in accurately understanding where customers are located and then in designing a feeder distribution network to meet those customers. A key issue, which we'll talk about during one of the questions that have been posed to the first panel, is how many distribution cables and how long cables are required to serve the customers. That's very much dependent on the layout of the customers, the concentration or non-concentration of those customers. In the new model we've used a variety of techniques to determine the presence of high-rise buildings, multi-tenant units that reduce the effective size of the domiciles that people live in, empty parts of rural CBGs that don't have any population in them so you can concentrate your service towards the parts that are occupied, and so on. So that we now believe that we can much more accurately measure the feeder and distribution cable to meet the real population density that's out there.

We've also added the engineering of long loops. Again, that's subject to a discussion during Panel 1, so I won't talk further about it right now. I guess the last point here about serving multi-unit dwellings. Typically in concentrated form,

it's easier to serve multi-tenant units than it is to serve the same number of people each sitting on an individual detached home lot.

The current version of the model for both unbundled elements and universal service basically portrays results by line density, that is the number of access lines per square mile. In the current version, or the emerging version, we not only can have results by density zone, which is still a very important thing to have because the results actually are quite markedly different by density zone, but in addition, we can produce results by wire center and by census block group, so that considerably different levels of disaggregation, depending on what's perceived to be the need by the Joint Board and by various state regulators are now possible.

As part of that, we have also expanded the number of population density zones from six to nine. Sounds a rather esoteric detail, but it has a very important result, and that is that in the current version of the model, the most dense population zone, which is greater than 2,500 lines per square mile, turns out to not be very representative of urban zones where population densities can range as high as, although not typically, but as high as 30,000 or more lines per square mile. Based on our examination, we now have defined a census block group that's greater than 10,000 lines per square mile, and in the process of doing that have really been able to focus on those urban areas as differentiated, for instance, from dense suburban

areas where the serving characteristics might be quite different than they are in the most urban area.

We have refined and changed and improved the way we calculate the interoffice network, now assuming the use of interoffice fiber rings because we're convinced that that's a very efficient serving mechanism for the kinds of services that we're providing. We've improved the depreciation calculation so that we look at things like net salvage value, exclude land from the depreciation calculation, and other such modifications that increase the certainty and confidence in the depreciation result. And in a number of cases, many of the inputs that formerly had to be set on a state-by-state level because they had a strong labor component, those labor adjustments are now built into the model directly so that, in fact, any input like a cable cost, installed cable cost, or installed wire center cost that has a labor component to it, there's an automatic adjustment for the state labor costs. The labor costs themselves, the adjustment factors we've taken from public sources, but like most other things in the model, they're also available as inputs that the user can modify if appropriate.

And that, I believe, captures the essence, as I say, that looks like about five or six changes out of all of the things that we have put in the model. I am checking to make sure I've got my whole list, I believe I have, number of details to follow, rapidly involved in putting out the results, quite happy with what we consider to be a number of significant improvements and

consider to be much finer-tuned analysis that can be performed. And we look forward to sharing it with you as soon as it's available. I wish it were available now, but we're in the final stages of that. Hopefully I've not used up too much time, but that's the essence.

Benchmark Cost Proxy Model (BCPM)

David Krech, FCC

Thank you very much. Our next presentation will be by Glen Brown from U S West. He will be discussing the Benchmark Cost Proxy Model. He has decided to do things a little differently and just sit at the table and do this one, so, and he also has handouts.

Glen Brown, U S West

I can never recall viewgraphs being used in this room. So, I brought handouts. And I want to approach this a little bit differently because I'm not going to do Engineering 101, I'm not going to do Flowcharting 101, but I want to talk about some concepts that are very important as the Joint Board and the FCC approach, I think a really historic decision because it's a real leap of faith to move from cost studies to proxies for cost studies. So, it's important they be done right.

First of all, the proxy that's going to be selected will be used for multiple purposes. This got its genesis in the

universal service case, but as is obvious in the interconnection proceeding in the notice that the Commission released last week, these proxies are going to be used, not just for universal service, but for pricing of unbundled network elements and for the reforming of access charges. And the impact of this is going to be enormous. The impact is truly in the tens of the billions of dollars. If you look at the difference between the Hatfield Study and the Benchmark Cost Model 2, the amount and size of the universal service fund differs from 5 billion, if you believe what Hatfield says, to 15 billion, per year, if you accept the assumption in BCM 2. If we look at using these costs as the basis for setting access charges, currently access charges produce $21 billion of revenue for price cap companies. AT&T is on record saying the economic costs associated with that as developed by the Hatfield Model are more like $3 billion. So, there's another $18 billion per year.

Now, the size of the impact of the unbundled element decision really isn't known. It will be in the billions. But I think as I'll try to suggest in a minute, it can have an impact on how local competition evolves, and really a lot does ride on this decision. The quality of the network which we've all taken for granted is something that should not be lost sight of here. Because if we're going to use these models to set the compensation that people that build networks will get, we will quickly find that the quality standards embedded in the model are going to become the de facto standard for the telecommunications industry. And I think that says we need to be careful that we

get it right. Because intelligent businessmen and women do not make investments in the future that they are not going to get reasonable returns on. So to the extent we're defining compensation by these models, the quality standards built into the models become very important.

And it is important that this job be done right because it is possible to build a network, a cheap network, a network that's lower in cost than today's. And it will work just fine until somebody moves, somebody builds a new house, somebody starts a new business, somebody tries to hook up a fax modem. It's important, as I mentioned, that we define what we expect this network to perform to. Can customers expect on two days' notice to get service anywhere in their territory, or is that something we want to rethink?

I think it's also important to realize that markets are going to react to the pricing signals that are given out. Back in August, the Commission released their interconnection decision and they put out proxy prices, price targets, for unbundled network elements that were based upon predominantly the Hatfield Model. And even though those are under stay now in the Eighth Circuit, those rules, those prices have found their way into many of the state arbitration decisions. Well, what's the impact of that? In the opinion of many, including myself, those prices are unreasonably low vis-a-vis the cost of the service and are going to affect the dynamics of a competitive LEC looking to come in and build competitive networks.

Well, what's happened since August? We've heard AT&T and MCI retreat from their ambitious plans to build local networks. I can recall when MCI Metro was going to invest $20 billion in local networks. A couple of weeks ago, John Malone indicated that TCI was backing off from their plans to enter local telephony. Yesterday, if you read in the *USA Today*, Time Warner indicated that they were scaling back their plans for entry in any but the most dense business markets and they cited, in doing that, "recent regulatory and legal decisions." So we really have to keep our eye on what it is we want to accomplish and, again, get it right.

And we think that the Benchmark Cost Proxy Model does it right. This is the fourth generation of evolution of these models. We've had scores of people whose careers have been built around designing quality networks provide inputs for the network design. And, you know, I'm not saying that somebody else might not have a better idea, that there might not be a different way to do it that's more efficient, but for goodness sakes, before we depart from a proven trend of what it's taken to provide a given and known level of quality, let's make sure we've got some validation that that's moving the network in the right direction and the direction we want it to go.

Now, why do we need a proxy model? And I'm asked that a lot by colleagues in my industry. Well, I think there's several reasons. First of all, competition, and particularly selective entry of competition, means we can't rely on implicit supports as

we have in the past, so we've got to move to more explicit support. The ability to raise support is going to be limited so we've got to target it. And we can't do what we've done in the past, which is kind of in a shotgun target based on statewide averages, but we've really got to find those high-cost customers and make sure that the money gets to them. It's going to minimize the amount of money needed, it's going to maximize the availability of affordable service. But since most LECs keep their books at the study area level, you need some kind of tool to break it down. And that's what a proxy model's for.

Secondly, the Joint Board has said there ought to be a proxy and the proxy ought to use forward-looking costs and ought to represent the costs of an efficient market entrant, and that's something to keep in mind. And I wonder, as we think back what's happened from the interconnection decision in the markets, if the Hatfield Model maybe, just maybe, might underestimate the cost of an efficient market entrant coming into the local marketplace.

Finally, proxy models are going to help markets work. If we're going to have competition, and I hate to say this with a roomful of regulators and people that work regulation, but if we're going to have competition, we ought to have less regulation, not more. If we're going to target support to small areas of geography, who wants to do 100,000 separate cost studies. Let's look at the cost factors up front. Let's look at the engineering design. Let's get it right and then let's get on with it and let's let the market work.

The Benchmark Cost Proxy Model, I indicated it's a fourth generation proxy model. It really has its parentage in two very good models, the Benchmark Cost Model 2 developed by Sprint and U S West, and the Cost Proxy Model developed by Pacific Bell. And what we've tried to do in BCPM, in spite of the difficultly it is to get that acronym out, is to truly incorporate the best aspect of both models. And time doesn't allow me to go into great detail, but basically what we did was we took the dynamic design capability of the Benchmark Model 2, married it in with the finer-grained ability to locate customers of Cost Proxy Model, and added a number of enhancements to come up what we hope can be a model around which consensus can emerge. We've added significant improvements. We've added a forward-looking cost-to-capital module. You can put in debt ratio, cost of debt, cost of equity, economic depreciation lives, many user adjustable variables. We've added the flexibility for separate cost factors for small companies, because while immediately this isn't going to be an issue, three years out, according to the Joint Board decision, small companies will have to operate under this. And we've also added the capability to analyze unbundled network elements and access service elements.

Now, it's a little bit of a misnomer to say that one model can do all of this, because really your universal service model is a top-down model: You engineer a network, you look at costs by specific areas. Your unbundled elements, your access services are provided in a wholesale environment, they're bottom-up studies: You look at the specific component costs, you allocate

reasonable joint and common costs. But what's important is that all three of those models, or all three of those functions, occur on the same fundamental data set of network design, of cost parameters. And that's what Benchmark Cost Proxy Model will allow us to do.

Another thing we did in the process was develop what we think is a reasonable set of forward-looking factors for the various cost components. How did we do this? We went to the telephone companies that are providing service today. We said: "Give us your best information of forward-looking expenses, forward-looking investments. What have you spent recently for state-of-the-art technology? What did it cost to install it?"

Now, maybe this isn't perfect and maybe people will say, "well, you've got a reason to overstate that." Well, first of all, we think we've done a good job, and maybe the Commission wants to have a submission of what is actually going on in the market today. I think that's important to get that real touch with reality, if you will, in the models. But just in case you don't like the default values, every value, every variable in this model is easily user adjustable, drop down menus that will take you right to where you can put in whatever value you want. But, again, I will give you the caution, when you change things from what is known — not that that's wrong — but make sure that you get it right.

And finally, in our filing on January 7, which regrettably didn't get into the Secretary's office until January 8, we made

an offer and that is that the sponsors of this model are providing this model unlocked, open to the FCC and the Joint Board to modify in any way they think is necessary to meet the public interest and to meet their obligations under the Telecommunications Act of 1996.

The Joint Board laid out eight criteria in their recommended decision. We think we meet them all. We do have a least cost, most efficient technology that we know of and that people are using and installing. All functions have costs. We've used forward-looking costs, we've not used invented costs. We've used forward-looking costs of capital and economic depreciation and here is where we think the Hatfield Model does not meet the Joint Board criteria. As stated in MCI's comments in response to the Joint Board decision, the Hatfield Model uses historical prescribed depreciation lives which are clearly backward looking. Lord knows my industry's been trying to get them forward looking for a long time, but they're historical. They use monopoly capital structures and returns, clearly backward looking. We include business services, we have a reasonable allocation of joint and common costs.

And here's another area where I question how Hatfield does it. We try to allocate per line the appropriate support costs for basic service because we think they're not really investment sensitive. The Hatfield Model has a 10% allocator. So let's say you've got a customer in an urban environment that costs 10 bucks a month, they'd get a buck of common costs. If you've got a

rural customer who costs $100, they get 10 bucks of joint and common costs, and I really think that flies in the face of what Congress had in mind in the Act.

Data formula computation software, available outputs plausible. From the beginning, we have tried to have the Benchmark process be an open process. We held workshops early on. We provided copies of the software to people. We have spent hundreds of hours on the telephone with State Commissions, with telecommunications consultants, with lots of people, trying to help them understand the model and taking input. We've seen that input every stage of the way. We have made a commitment that we're going to give this model to the Joint Board and to the Commission, unlocked, open, and we think the time is short enough that we really need to get about finding what is the reasonable way to do the proxy costs.

And finally, engineering assumptions I think are very critical. We have carefully designed the Benchmark Cost Proxy Model to meet all of the current engineering design rules. It's a body of technology that's maintained by standards associations about how networks have to function. I can guarantee you that the Benchmark Cost Proxy Model will meet that, that it will provide quality service to all customers. We have concerns about whether the Hatfield Model can meet that for band width, for transmission loss, and for powering.

Well, finally, the task that the Joint Board has is not a simple one. It's very complex. But, I would just like to offer

a couple of thoughts about how they might want to go forward in terms of examining the models, including the Benchmark Cost Proxy Model. First of all, you need to look at it from a number of dimensions. You've got to look at it from an economics perspective. Does it correctly model forward-looking costs? And does it reflect the costs of a new market entrant entering the market? Very important. And consistency is very important. Engineering principles, will it function to specifications? I know in my territory, or in U S West's territory, we have requirements that we provide service on several days' notice anywhere in our territory. We got in into some trouble recently because we did not have enough plant on the shelf. Thankfully that's behind us now, but it's important that we meet this.

This is an engineering test. This Commission should have economists here, they also should have engineers attesting to the validity of the models. Do suppliers provide equipment at the model prices? I think Ben Johnson mentioned this. It's a problem. I think that if industry and the Commission work together, we can develop a database with appropriate proprietary safeguards so that nobody's competitive interests are harmed, but that we get a model that touched that ground into reality that's so important. Same thing with installation costs and also from a computer science perspective, does it do it right? That's important.

And finally, we need to evaluate the models from a common sense perspective. I'm reminded of an experience in a recent

Utah rate case when AT&T and MCI were arguing that we should have to provide unbundled network elements. They filed a study with this commission that said — that estimated — they said that it costs a lot of money to get into local markets therefore we need access to the networks of the incumbent. And their study estimated the cost per loop of about $1,200. Well, we show up in Utah and AT&T shows up with the Hatfield Model, and Utah is not a real low-cost State, you know. And the cost, lo and behold, was 360-some dollars. Now, I'm not saying that 1,200 is right, I'm not saying the 360-some dollars is wrong, but there ought to be an explanation for that change. And I think any shifts that we see, any fundamental shifts, we ought to know why, or else we ought to question them very carefully.

There ought to be a relationship between different areas of geography. Back when the Hatfield 2.1 or 2.2 were filed, I did a little sword, I just wanted to see if you plotted from the lowest cost state to the highest cost state, what that would look like. And what I found with the BCM2 was a curve that kind of reflects the diversity of this country. You've got some areas, like the District of Columbia where I live now, which are very low cost. You've got some areas like Wyoming and Montana that are very high cost. You plot the Hatfield Model and you see very little slope in it, a very homogeneous model. One of the things that grabbed my attention was that the State of Montana — which I happen to know a lot about, I've spent some time there — came out slightly less in cost than the State of Ohio. And I don't know it as well

as I know Montana, but I think there's a little bit of difference there.

So, in summary, and in conclusion, it is a fundamental step that the Commission is going to be undertaking in selecting a cost proxy model. It's important that quality of service be kept in mind. It's important that touch with reality be kept in mind. And it's important that it be done right. And those of us that are sponsoring the Benchmark Cost Proxy Model want to help the Commission in coming to the right decision. Thank you.

David Krech, FCC

All right, thank you very much gentlemen. I think those presentations give us a good foundation to move through the workshops for the next couple of days. We've heard a bit about each of the three models before us. We've heard some contrast between the three models and questions raised about the particular models, all just to whet your appetite for things to come. Our first panel will be on Modeling Network Investment. We will start at 10:30 sharp. In case there's any questions, because I know in this Commission there are multiple time zones, we will use the clock that is above the door right over there. When that clock says 10:30, then Dr. Bob Loube from the FCC will begin Panel number 1 sharply. Thank you and we look forward to seeing you back here at 10:30 sharp, please.

(Break)

Panel 1: Modeling Network Investment

Robert Loube, FCC

Good morning. Welcome to the first panel on the proxy cost models. This panel will focus on network investment issues. I am Bob Loube with the FCC staff. And now I'd like every member of the panel to introduce themselves. I think we'll start with John over on that side.

Self-Introductions

My name is John Schrotenboer with Southwestern Bell. I'm Dave Porter, MFS. I'm Ben Johnson, I'm an economic consultant. Jim Dunbar from Sprint. Paul Mercer, Hatfield Associates. David Gabel, Queens College. Lisa Hanselman, GVNW. I'm Tom Wilson with the Washington Utilities and Transportation Commission staff. And I'm Pete Martin with BellSouth.

Robert Loube, FCC

Thank you. Let me go over the procedures again. First, I will ask a question, then I will open it up to the three model proponents to answer. They will each have two minutes to answer the question. We have a timekeeper sitting right in front of us here. She will have two cards: One orange that will tell you you're halfway through your time, and the other will be red, it will stay stop, just in case somebody's color blind also. And that's when you're finished, okay? So, you have the choice of

either reading or looking at colors, that's up to you. After the three model proponents answer, I'll open it up to the other participants and they will also have two minutes to answer the question. After that there will be a chance for anyone to respond in rebuttal for a minute and then we will go on to the next question and so forth until we use up all our time. After that, the audience will be allowed to ask questions to the panel also. So let's begin with the first question. We have, by the way, sent these out to the panel members before today so that they've had an opportunity to review them and organize their thoughts on the questions.

In their recently filed submissions to the FCC, the model proponents stated that the service standards used to design the model distribution networks would either support the provisional ISDN and other advanced services, or could be said to support those services. The Recommended Decision defines universal service as voice grade access with a frequency range between approximately 500 Hertz and 4,000 Hertz. In light of the differences between model practices and the Recommended Decision, do the models include more investments than are required to provide universal service? If so, what investments can be eliminated? Alternatively, if the models fail to include all of the estimates required for the provision of universal service, what investments are missing? And I think I'll start with my left here, with Mr. Mercer.

Robert Mercer, Hatfield Associates

Good morning. I really enjoy this format where we get a chance to answer these questions and the ones you ask and hopefully they'll get addressed to the model proponents so you can rely directly on the answer of the people who know those models and not on somebody else answering for the model. And in that light, let me answer the question the following way: The Hatfield Model engineers and equips the network to provide high-quality voice and narrow band data services to all customers using an economic design. In most cases, in most cases, the loop design is also adequate for ISDN, but ISDN requires additional elements, for instance, added line cards in the subscriber loop carrier, terminal and possibly additional software in the switch depending on the switch vendor. And those additional components for ISDN have not been included in the Hatfield Model. In addition, there are few loops, the loops longer than 18 kilofeet, where the Hatfield Model Release 3 will provide special treatment required for voice services in the form of a coarser gauge cable, load coils and the like.

To enhance those loops — to support ISDN would be extremely expensive and those investments have not been included. So the extra investments required to support ISDN have been excluded from the model consistent with the recommended decision, and our view is it would not be appropriate to include those investments directly because ISDN is not part of the Recommended Decision, but they could be readily added. So the operative phrase in the

question as it was read is "or could be set to support those services." The Hatfield Model, at the discretion of the Joint Board, could certainly be analyzed to show what those costs would be, but they have not been included in the model at this point.

Robert Loube, FCC

Thank you. Jim, do you want to go next?

Jim Dunbar, Sprint

From the standpoint of the Benchmark Cost Proxy Model or its predecessors, the model is designed to provide high-quality, properly engineered voice grade services. It does not provide ISDN services but can be adapted to it. The cost for ISDN have not been included. It includes all of the elements that are necessary for voice grade services, unlike some of the other models that have had significant amounts missing, such as the Hatfield at least 2.2.2 Model, that did not have cable that went far enough, missed the first manhole, didn't have enough ducts, missed the first pole in every aerial cable segment, undersized the gauge in the length of the cable, and did not include the loop extenders or the other necessary powering equipment that was required to do a properly engineered loop. All of these things are necessary to ensure that, in fact, the 500 to 4,000 Hertz requirements are there. Long loop design also, if you use that type of facility, which is used in the Hatfield Model, does not,

in fact, reach 4,000 Hertz, but the signal cuts off below that because load coils terminate the signal below 4,000 Hertz.

The BCPM uses an unloaded loop, has bare wires that in fact provides a high-quality signal, but is not restricted by load coils or other appurtenances that are on there and therefore can have a much wider band width that reaches across the network and provides the quality services that you would expect, such as a fast modem for Internet services and that type of thing.

Robert Loube, FCC

Thank you. Ben?

Ben Johnson, Ben Johnson Associates

I don't have a whole lot to add, but basically the crux of the issue is the extent to which you deploy fiber. You would be deploying fiber for either of two reasons, either because it is less costly than copper, or because it provides a wider array of higher quality services. The illustrious study we ran had a relatively low cutoff of fiber and thus encouraged deployment of a lot of fiber. As such, it certainly would be adequate to provide the basic voice grade services that are called for and probably has some additional fiber in some locations where it's more costly than necessary, but considering the additional revenues that would eventually be generated by that fiber would be consistent with what a new carrier would actually likely do. As such, it is in a much better position to provide ISDN than a

purely copper network. If you're interested in this issue, essentially all you have to do is you focus on the tradeoff of fiber and copper and look at it, first, from the point of view of purely cost minimization and how much higher cost are you incurring by deploying additional fiber. Chances are you'll find that the additional deployment that's implied by a 7,500 foot cutoff or a 9,000 foot cutoff would still be cost effective when you consider the additional revenues that can be generated, not only from ISDN services, but in the future from data services and the like.

Robert Loube, FCC

Thank you. John?

John Schrotenboer, Southwestern Bell

Well, you heard from the model builders who have stated what they have designed into their models and what they believe is accurate. To the extent that there are no extraordinary investments that are included that fall outside of the realm of universal service, I think that's entirely appropriate in meeting the basic definition of universal service. The point about fiber, I think, becomes a question that could be evaluated through the process to determine what would be the most economic way to provision that service, but certainly I don't think there's any intentional bias towards providing services beyond what is required for the provision of universal service in the

models that I've reviewed, and I've reviewed both the Hatfield Model and the BCM2 Model.

Robert Loube, FCC

Thank you. David?

David N. Porter, MFS

I think we need to step back a half a step and ask whether or not the Joint Board got the right definition of universal service and then address the question of whether or not the models appropriately reflect that. My understanding of the preliminary decision focused on voice grade services and certainly as subsidized universal service, I think that's an appropriate focus. But I think the Joint Board Recommended Decision substantially missed a very important part of the legislative mandate for universal service, and that is to bring the capability of advanced services to all of the American public, and that the Joint Board missed the opportunity, which I hope the Commission will reconsider in its current round of comments, to reflect on the requirements that are already required of the smallest rural utility companies. To be eligible for a rural utility service loan in the future, you have to commit to being able to provide on demand facilities, loops, capable of supporting data at a rate of at least one megabit per second. I think that is a critical additional point that needs to be included. Now, what's the impact of that on the model? My